

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A2003/01589	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/AT2004/000338	International filing date (day/month/year) 05.10.2004	Priority date (day/month/year) 08.10.2003
International Patent Classification (IPC) or national classification and IPC C23C2/00		
Applicant MIBA GLEITLAGER GMBH		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-16 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 1-26 _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* _____ received by this Authority on _____
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1/2, 2/2 _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-26	YES
	Claims	NO
Inventive step (IS)	Claims	YES
	Claims 1-26	NO
Industrial applicability (IA)	Claims 1-26	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

1. This report makes reference to the following documents:

D1: WO 97/22725 A (MIBA GLEITLAGER AG; MERGEN, ROBERT), 26 June 1997 (1997-06-26)

D2: PATENT ABSTRACTS OF JAPAN, Vol. 2000, No. 04, 31 August 2000 (2000-08-31) & JP 2000 017363 A (TAIHO KOGYO CO LTD), 18 January 2000 (2000-01-18)

D3: EP-A-0 911 425 (LINDE AG; LINDE AG), 28 April 1999 (1999-04-28)

2. The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step (PCT Article 33(3)).

2.1 Document D1 is considered to constitute the prior art closest to the subject matter of claim 1 and discloses (the references in parentheses are to that document): an aluminium alloy for a layer, in particular of a friction bearing, which contains tin as main alloying element, to which a hard material from at least one first group of elements

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including the elements iron, manganese, nickel, chromium, cobalt, copper or platinum, magnesium, antimony is added. The elements in the first group of elements are added to the aluminium alloy in a quantity sufficient to form intermetallic phases, e.g. aluminides, at the boundary layers of the matrix. In addition, at least one other element from a second group of elements which includes manganese, antimony, chromium, wolfram, niobium, vanadium, cobalt, silver, molybdenum or zirconium is added to replace at least part of a hard material of the first group elements and form approximately spherical or cubic aluminides (7).

Consequently, the subject matter of claim 1 differs from the disclosure known from D1 in that the soft phase and/or hard phase is dispersed in the matrix, and the solid solution or compound is formed only at the phase boundaries of the matrix with the soft phase and/or hard phase.

The present invention can therefore be considered to address the problem of providing an alloy and sliding layer for a sliding element with good break-in properties and also high wear resistance.

The solution proposed in claim 1 of the present application cannot be considered inventive (PCT Article 33(3)) for the following reasons:

Document D1 discloses an aluminium alloy for bearings characterised by its fatigue resistance,

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since it was feared that the conventional Al-Sn-silicon-Cr type of aluminium alloy for normal bearings would cause fatigue phenomena if used in the most recent heavy-load internal combustion engines. That alloy has an alloy structure comprising 1-15% silicon, 1-8% Sn, 0.05-0.3% Cr, 0.05-0.3% Zr, the remaining percentage being Al and inevitable impurities; a structure in which an Al-Cr semiconducting compound is precipitated mainly at the crystal boundaries between the aluminium and the Al-Zr semiconducting compound, is precipitated mainly at the subgrain boundaries within the crystalline aluminium grains.

Consequently, a person skilled in the art would consider the inclusion of this feature (D2) in the aluminium alloy described in D2 a conventional measure for solving the stated problem.

The same reasoning analogously applies to independent claims 12 and 13.

The subject matter of claims 1, 12 and 13 is thus not novel (PCT Article 33(2)) or does not involve an inventive step (PCT Article 33(3)).

Dependent claims 2-14 do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT novelty or inventive step requirements; see the documents cited in the search report and their passages indicated therein.

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Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
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2.2 Document D1 is considered to constitute the prior art closest to the subject matter of claim 1 and discloses (the references in parentheses are to that document): a process for producing composite materials made of aluminium alloys, in particular for a friction bearing, in which hardenable aluminium alloys which contain soft phases are alloyed with alloying elements formed by hard materials such as copper, manganese, iron, cobalt and zirconium. Tin is added to the alloy, in a proportion ranging from 16 to 48% by weight, preferably from 20% to 30% by weight; a proportion of intermetallic phases during casting is limited to maximum 70%, preferably 20-60%, of the medium circumference of the visible matrix grain boundaries, in a proportion by volume of 0.15-5% of the tin network structure; and the size ratio of at least 15% of the tin particles to the intermetallic phases equals 1:1.

The subject matter of claim 1 therefore differs from the disclosure of D1 in that an alloy is produced as a first marginal layer by means of a cold gas injection process.

The present invention can therefore be considered to address the problem of achieving a satisfactory matrix consolidation.

Document D3 describes the same advantages of the feature of a cold gas injection process as the

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present application. A person skilled in the art would therefore consider the inclusion of this feature in the process described in D1 a conventional structural measure for solving the stated problem.

3. Dependent claims 16-23 do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT novelty or inventive step requirements; see the documents cited in the search report and their passages indicated therein.